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VIEWpanel Technical Manual

VIEWpanel is a prefabricated panel comprising 0.21 aluminium skin (1100 alloy) both sides, apart from our lite grade, which is 0.12 aluminium skin both sides and a polyethylene core containing a high percentage of recycled PE. The sheet is painted with gloss or matt polyester paint and masked with a removable polyethylene film which protects the sheet during storage and processing.

General Properties

Testing item	***Standard***	***Result***
Unit Weight	ASTM D792	t3mm=4.6kg/m² t4mm=5.5kg/m
Outdoor temperature resistance	ASTM D1654	No abnormity
Thermal expansion	ASTM D696	3.0 x 10- °C-¹
Thermal deformation temperature	ASTM D648	115°C
Thermal conduction	ASTM 976	0.102kcal/m.hr°C
Flexural rigidity	ASTM C393	14.0 x 10-
Impact resistance	ASTM D732	1650kgf
Adhesive strength	ASTM D903	0.74kgf/mm
Sound-insulating rate	ASTM E413	29 dB
Flexural Elasticity	ASTM D790	4055kg/mm²
Shear resistance	ASTM D732	2.6kgf/mm²
Minium bending radius	ASTM D790	≥300mm
Fire propagation	ASTM E84	Qualified
Smoke developed	ASTM E84	<45
Wind-pressure resistance	ASTM E330	Passed
Properties against water	ASTM E331	Passed
Properties against air	ASTM E283	Passed

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SURFACE PROCESSING

1) Digital printing and mounting

VIEWpanel can be printed by UV digital flatbed printers with excellent ink adhesion results on the polyester paint.

Various types of self adhesive decorative films including coloured opaque films and digitally printed graphics can be mounted and applied on ***VIEW***panel. Please ensure that the correct tension is used when mounting films through a laminator to prevent curling or peeling of graphics.

N.B. For all types of printing, condition the sheets in the printing environment ideally for 12-24 hours.

2) Screen-printing

In screen-printing, vinyl inks or 2 component polyurethane type inks are suitable for all printing of ***VIEW***panel. Normal adhesion is expected with these inks after drying at 80° for 30 minutes and curing at room temperature for 24 hours. The typical printing procedure are as follows:
A. Remove all dust and dirt with a soft cloth. Oily dirt will cause printing defects.
B. Cure or dry under proper conditions. Follow instructions from ink manufacturer.

Notes on screen-printing:
Keep the curing temperature at ambient temperature.
If the curing temperature is too high deflection of the panel may occur.

TOUCH-UP COATING METHOD

Commercial or custom acrylic paints are suitable for repair of the coating of all finishes of ***VIEW***panel**.**
Typical procedures are as follows:

A. Clean the surface, removing any dirt.
B. Stir the paint well. Apply the paint with a brush or a pencil type brush.
C. Dry and cure at room temperature as in the instructions from the manufacturer.

Normally acrylic paints show good adhesion after the paint has cured, however the touched-up portion may show a slight difference in appearance.

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PROCESSING METHODS

1) Summary

A wide variety of machines and tools can be used to process ***VIEW***panel panels. These can be classified these into two groups; On-site tools and machines and workshop machines.
The main machines and tools are show in the following tables;

On-site tools and machines

Processing	***Tools or Machines***	***No.***
Cutting	Table Saw	1
	Circular Hand Saw	2
	Hand Router	3
	Hand Jigsaw	4
Groove	Grooving Machine	5
	Hand Router	3
Chamfer	Hand Trimmer	6
	Plane	7
Hole Punching	Hand Drill	8
Notch	Notching Tool	10

Workshop machines

Processing	***Tools or Machines***	***No.***
Hole Punching	Punching Machine	9
Cutting	Panel Saw	13
	Square Shear	14
	CNC Router	15

2) Saw Cutting

Various types of circular saws including table saws, circular hand saws and panel saws can cut ***VIEW***panel.A suitable carbide-tipped blade specifically for aluminium or plastic should be used.

Example of suitable saw blades:

Blade Diameter	255 mm
Number of teeth	80 to 100
Cut Width	2.00 to 2.6mm
Rake angle	10°
Tip	Carbide

Operating Conditions

Rotation of saw blade	255 mm
Number of teeth	80 to 100

Notes on saw cutting:

A. Do the cutting operating with the effective site facing upwards to prevent the panel from scratching and the protective film from peeling off.
B. Remove cutting chips from ***VIEW***panel carefully after cutting to avoid damage during storage or Installation.
C. Sharpen or replace the saw blade when it becomes dull. A dull blade with result in large burr or distortion along the cut edge.

3) Shear Cutting

Square shears are the most efficient. Generally the most suitable clearance and rake angles are as follows:

Clearance	0.04 - 0.1mm
Rake angle	1°

4) Trimming

When saw cutting a burr can appear on both sides of the edges. In shear cutting either a droop or burr appears on each edge. If installing the panel with the exposed cut edge you must take note of the edge conditions.

Namely in saw cutting you should keep the saw blade sharp to have a sharp cut. In shear cutting you should adjust the clearance of the die properly.
Generally the condition of the edge is more important for interior rather than exterior applications.
Some applications may call for trimming and for that we recommend a plane or sandpaper.

5) Curved Cutting

A hand router and trimmer can be used to cut ***VIEW***panel in a curved pattern. Use of a guide template will help to stabilise this work. A jigsaw may also be use for the cutting of complex shapes.

Notes on the use of a guide plate:

A. Put an appropriate guide plate (template) on the effective side of ***VIEW***panel to do the routing work through the guide plate.

B. Particles caught between the template and the effective surface of ***VIEW***panel may cause dents or scratches to the panel.

6) Drilling

You can make holes with a hand drill or a drill press that are equipped with the correct drill bit, a hole-saw and a circle cutter.

7) Punching and notching

You can use a punching machine for notching and cutting out.
The suitable clearance between punch or a die is 01.1 or smaller.
(Material thickness X approximately 2%) A small droop will appear at the punched edge.

JOINING METHODS

1) Adhesives

We recommend the use of commercial grade adhesives for the installation of ***VIEW***panel.

A wide variety of adhesives are available however there are some that are not suitable such as vinyl

Adhesive type		***Epoxy***	***Chloroprene***	***Silicone RTV***	***Cyano-acrylate***
Suitable material to be adhered	Metal	✓	✓	✓	✓
	Timber	✓	✓	✓	✓
	Gypsum board	✓	✓	✓	✓
	Styrene foam	✓	✓	✓	✓

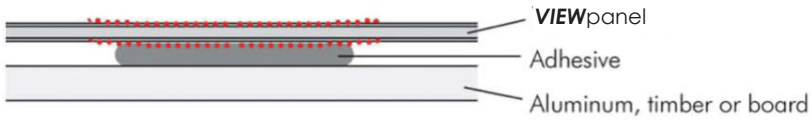
Notes on adhesives:

A. Prior to adhesion work, removal all the foreign matters such as dust particles, grease, water etc from the area.

B. Select the most appropriate adhesives that ensure the necessary adhesion power in the atmospheric conditions. The adhesive power depends on the surface condition of the substrate. Follow the adhesive manufacturer's instructions.

C. When ***VIEW***panel is adhered to a different material it is possible that ***VIEW***panel will show a deflection due to the thermal expansion difference or dimensional change of the material.
We recommend testing of the adhesive before fabrication and installation.

D. Some adhesives may cause a distortion after hardening due to shrinkage of the adhesive, as show in the diagram. Therefore, pre-testing is necessary for some types of adhesives. Generally, some of the epoxy adhesives, polyurethane adhesives and silicone adhesives may show this kind of distortion. The distortion is usually very slight and sometimes it is not visible in low gloss and matte finishes.



2) Welding of core
One end of ***VIEW***panel can be adhered to another end of ***VIEW***panel by welding the hot core with a hot melt adhesive(glue). Prior to heating a glue stick you will have to pre-heat the core surface for good adhesion. Normally mechanical reinforcement is necessary after welding.

3) Double-sided Tape
Double-sided tape like 3M's VHB tape or RP45 is effective for joining ***VIEW***panel to other materials. VHB tape simplifies the joining work and the thicker ones allow movement of the adhered two materials to some extent.

4) Hook/Loop fastener
Hook/loop fasteners like Velcro tape is useful for guide signs and displays. This type of fastener is removable and repositionable.

CARE AND HANDLING

1) Packing & Unpacking
A. Unpack and pack wooden crates in a clean place.
B. Remove dust and chips from ***VIEW***panel and packaging paper. The hard particles, such as sand and cutting chips caught between panels will cause a dent on the panel.
C. Do not handle ***VIEW***panel on a floor, handle it on a work table.
D. Handle ***VIEW***panel carefully by two persons facing the effective surface upward, to avoid possible rubbing of ***VIEW***panel surface during handling of panels.

2) Transport
A. Lay the packed ***VIEW***panel horizontally and do not place heavy goods on it.
B. Mark clearly "handle with care", "keep dry", "no hooks" and "this side up" on the packaging.
C. Treat Pallets carefully during transportation and unloading.
D. Inspect incoming pallets for transport and moisture damage. Any damage must be reported immediately and confirmed by the forwarder.

3) Protective Film
It is possible that the protective film of ***VIEW***panel may be damaged by direct sunlight and moisture. Store the panels in a dry atmosphere, also not exceeding 6 months. Remove the film immediately after the installation is completed.

4) Storage
A. Store ***VIEW***panel panels in a cool and dry area.
B. Place the same size panels on strong pallets. Do not stack up different sizes together. Stacks must not be more than 4 pallets.
C. If panels become exposed to moisture they must be dried in order to avoid possible staining and corrosion.

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CLEANING METHOD

1) General Cleaning

Firstly try a water rinse using a soft sponge and applying modest pressure to remove the stain. If the stain remains after the panel has dried then use neutral detergents or household cleaners diluted with water. Typical cleaning procedures are as follows.

A. Dilute a detergent or a cleaner to 1- 5% with water.
B. Apply the solution and spread onto the ***VIEW***panel surface with a soft cloth of sponge. Wait for 1 minute, for the solution to clean the surface.
C. Wipe the solution with a squeegee and wipe the remaining solution with a damp cloth containing only water.

2) Stubborn Stains

For stubborn stains an alkali cleaner such as sharpshooter or windex can be used.

If you intend to use a strong cleaners or stain removers, pre-test a small area. Generally strong acid and alkali products may cause a gloss or colour change as well as swelling of the coating film.
Do not use cleaners containing abrasives. Do not use strong solvents or paint thinners.

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Product Data Sheet

Testing item	Standard	Result
Unit weight	ASTM D792	t3mm=4.6kg/m² t4mm=5.5kg/m²
outdoor temperature resistance	ASTM D1654	No abnormity
Thermal expansion	ASTM D696	$3.0x10^{-5}°C^{-1}$
Thermal deformation temperature	ASTM D648	$115°C^{-1}$
Thermal conduction	ASTM 976	0.102kcal/m.hr°C
Flexural rigidity	ASTM C393	$14.0x10^{5}$
Impact resistance	ASTM D732	1.650kgf
Adhesive strength	ASTM D903	0.74kgf/mm
Sound-insulating rate	ASTM E413	29
Flexural Elasticity	ASTM D790	4055kg/mm²
Shear resistance	ASTM D732	2.6kgf/mm²
Minimum bending radius	ASTM D790	(LO)45mm(PO)70mm
Fire propagation	ASTM E84	Qualified
Smoke developed	ASTM E84	<45
Wind-pressure resistance	ASTM E330	Passed
Properties against water	ASTM E331	Passed
Properties against air	ASTM E283	Passed

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Testing item	Standard	Result
Finish coat thickness	ISO 2360 (CNS 8406)	27.6um
Gloss	ASTM D532-89	20-45%
Pencil hardness	ASTM D3363-00	2H
Toughness	ASTM D4145-83	2T no rift
Adhesice force	ASTM 3359-97	4B
Impact resistance	ASTM D2794-93	>100kg.cm
Abrasion resistance	ASTM D968-93	64.6L/mil
Mortar resistance	ASTM 605.2-91	24hrs No blister
Humidity resistance	ASTM D714-97	3000hrs No blister
	ASTM D2247-02	
Boiling-water resistance	ASTM D3359-B	Passed
Salt-spray resistance	ASTM B117-03	3000hrs No blister
Acid resistance	ASTM D1308-87	No effect
	AAMA 605.2-91, TEST#7, 7.31	
Alkail resistance	ASTM D1308-87	Passed
Solvent resistance	ASTM D2248-73	Passed
	ECCA T5&NCCA NO.11-18	
Color retention	ASTM D2244-93	▲E=0.34
Chalk resistance	ASTM D4214-98	No Chalking
Gloss retention	ASTM D2244-93	84.2%